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Biotechnology Notes

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Biotechnology Notes, a compilation of agency activities, news events, and upcoming meetings, is prepared for members of the U.S. Department of Agriculture's (USDA) Committee on Biotechnology in Agriculture (CBA) by USDA's Office of Agricultural Biotechnology (OAB).

INSIDE USDA

USING BIOTECH TO HELP CONTROL RINDERPEST

Many African and Asian nations are battling a contagious cattle disease called rinderpest. Although there is a very good vaccine on the market, it needs to be refrigerated and therefore can't be used in outlying regions. Now, researchers at the University of California, Davis, have developed a recombinant vaccine against rinderpest that may not need cold storage or special equipment.

USDA's Animal and Plant Health Inspection Service (APHIS) is advising the University and the Agency for International Development on requirements needed for shipping the vaccine abroad for small-scale contained testing. According to APHIS officials, the first step is for the principal investigator to submit data indicating the vaccine is safe. This requirement goes back to the 1985 amendment to the Virus-Serum-Toxin Act of 1913 and prevents unsafe products from being exported. After these and other safety measures have been met, the vaccine will be airlifted and sent on its important journey.

OAB ARRANGES TOUR FOR WEST GERMAN SCIENTISTS

Last month, four West German scientists visited several U.S. field sites for biotechnology experiments. Their mission was to gain insight into safeguards needed for conducting outdoor field trials and methods of assuring public support for field testing biotechnology products. Their tour was arranged by the Office of Agricultural Biotechnology (OAB) and the West German Embassy. The first leg included a stop at the Crop Genetics Inc. field plot in Beltsville, Md. Officials from the Agricultural Research Service, the National Agricultural Library, and APHIS briefed the visitors on biosafety, data collection, and regulations. The next day Orville Bentley, Assistant Secretary for Science and Education, officially welcomed the guests. The OAB staff and representatives from the Environmental Protection Agency (EPA) gave presentations and exchanged views on topics related to regulations and biosafety. The scientists then visited Clemson University, the University of Florida, Mississippi State University, and Monsanto Co. in St. Louis, Mo.

UNLOCKING THE MYSTERY OF PLANT FERTILIZATION

Researchers at Cornell University, under a grant from the Competitive Research Grants Office of the Cooperative State Research Service, have been studying the molecular biology of self-incompatibility. Working with Brassica, the mustard family, they located, isolated, and cloned the gene that confers self-incompatibility. The team used Agrobacterium as a gene vector to transfer the gene into the self-compatible oil-producing rape plant. The effectiveness of this transfer is the question now under study. If the research is successful, the Cornell experiment would provide a model for genetically engineering many other self-compatible crop plants and lead to the production of hybrid seeds.

OFFICIALLY SPEAKING

USDA has selected two new directors to fill senior-level biotechnology posts. Alvin L. Young was chosen Director of the OAB as well as Scientific Advisor to the Secretary of Agriculture. Young has been acting in both positions since November 1987. An expert in herbicide physiology, he came to USDA from the Executive Office of the President where he was Senior Policy Analyst for Life Sciences at the Office of Science and Technology Policy. As OAB Director, Young said he plans "to continue to build on the spirit of coordination and cooperation that now exists among USDA sister agencies and between the Department and other agencies, institutions, and concerned groups." As Scientific Advisor, he will be available to the Secretary of Agriculture, all USDA agencies, the EPA, the National Institutes of Health, the National Science Foundation, and the Occupational Safety and Health Administration to provide critical evaluation and advice in the broad area of biotechnology.

Terry L. Medley was selected Director of Biotechnology, Biologics, and Environmental Protection at APHIS. He had been Acting Director since last October and Director of the Biotechnology and Environmental Coordination staff from Dec. 1986 to Oct. 1988. Medley joined APHIS after serving as Senior Attorney in the regulatory division of the Department's Office of General Counsel. Medley said he sees his position as one "filled with challenges and new opportunities for APHIS to maintain its leadership role in agricultural biotechnology."

WE'RE IN TOUCH . . . SO YOU BE IN TOUCH

The Agricultural Library Forum (ALF) is an electronic bulletin board system operated by USDA'S National Agricultural Library (NAL). ALF provides a convenient, economical medium for the electronic communication of information about NAL, its products and services, and for exchanging agricultural information among interested institutions and individuals. ALF is available 24 hours a day, 7 days a week to anyone with an interest in the system. ALF can be reached by dialing either (301) 344-8510 or (301) 344-8511.

Recently, the Biotechnology Information Center at NAL set up a conferencing module within ALF. This module was initiated to provide information exchange between individuals with an interest in agricultural biotechnology. Information on upcoming meetings, suggestions for new NAL information products, or discussion of current issues in biotechnology are welcome. If you already know about ALF, this module can

be accessed by selecting to "join a conference" at the main menu. If you are not yet familiar with ALF and would like a user's guide, contact the Biotechnology Information Center, NAL, Room 301, Beltsville, Md. 20705, or call (301) 344-3218.

--Suzanne Nanis
NAL

AROUND THE COUNTRY (AND THE WORLD)

NEW OTA STUDY UNDERWAY

The Office of Technology Assessment (OTA), an arm of Congress, is preparing an in-depth study of international biotechnology activities and how the United States can continue to be competitive in world markets. The study will assist U.S. policy-makers in developing a national strategy for biotechnology.

The study will identify current U.S. capabilities and compare them to international efforts; address trade, export, and intellectual property rights issues; assess the feasibility of cooperative ventures; identify international agreements now occurring and evaluate their impact; and examine the issue of technology transfer between Federal and private interests.

The first two reports should be published early next year and the last one in late 1990.

BRINGING BIOTECH TO THIRD WORLD COUNTRIES

In a recent issue of the Conservation Foundation Letter, Anne Hollander, an Associate at the Conservation Foundation and a member of USDA's Agricultural Biotechnology Research Advisory Committee, discusses the impact biotechnology could have on developing nations. Although the benefits may be significant -- increased food production, better disease control, new sources of renewable energy -- there also could be stumbling blocks. One hindrance, says Hollander, is a lack of economic incentive on the part of the investor company. Many developing nations simply cannot afford to pay for high-tech agricultural or biomedical products. Another obstacle arises due to the poor infrastructure in less developed countries, a factor that could cut into the manufacturing, marketing, and distribution of new products. Other important resources also are in short supply, such as experienced researchers and managers and modern production facilities.

The potential also exists for environmental problems in developing nations. Certain safeguards could be initiated in the form of regulations, says Hollander, but countries would need assistance in this area from other countries. Also not to be overlooked is the question of public acceptance of biotechnology and any proposed environmental releases. Finally, there is the socio-economic risk referred to as the "technology treadmill." In this scenario, prices decline because of the new technology but the poor farmer who failed to change over is squeezed out of farming and forced into the city to seek other employment.

Hollander suggests nations and multinational corporations begin to develop policies and strategies for bringing biotech to less developed countries. She suggests

a thoughtful examination of the following issues: 1) the economic and other non-technical factors that might undermine a developing nation's ability to realize biotechnology's potential benefits; 2) the adequacy of incentives to encourage environmentally safe research; and 3) the effect of genetic engineering on major global markets and the socioeconomic impacts on developing countries.

Copies of the Conservation Federation Letter are available from Anne Hollander, The Conservation Foundation, 1250 24th St. N.W., Washington, D.C. 20037, or call (202) 293-4800.

EVERYTHING YOU ALWAYS WANTED TO KNOW ABOUT JAPANESE BIOTECHNOLOGY

North Carolina's Biotechnology Information Division has available at a small cost a new database with detailed information on about 250 Japanese companies working in biotechnology. The compendium includes data on research projects, major investors, employees, and top management officials. Other informational materials about Japan's biotechnology industry are also available and can be obtained by calling Dr. Mark Dibner, Director of the Center's Biotechnology Information Division, at (919) 541-9366.

IN CASE YOU WEREN'T THERE

- "Biotechnology for Aerospace Applications" was the theme of a conference held March 1-2 at the U.S. Air Force Academy in Colorado Springs, Colo. Some of the areas discussed included biotransformation, biomaterials, biodegradation, bioenergy, bioelectronics, biomining, biomimetics, biolubricants, bioadhesives, biofuels, biosensors, neurobiotechnology, and biosurfactant production. It was noted that the FY 1990 budget targeted \$58 million for medical biotechnology and \$38 million for non-medical applications of biotechnology.

- A workshop was held in St. Louis, Mo., March 8-9, to review and discuss proposed chapter outlines for the forthcoming book on the **societal impacts of biotechnology**. This project is part of a major study being conducted under a OAB-Purdue University agreement. Participants at this workshop agreed that each author would develop a chapter for a "base book" intended primarily for managers and professionals who want to know more about the present and potential impacts of ag biotechnology on society. A corresponding set of leaflets will be prepared for lay audiences. Some of the topics to be covered include a discussion of ag biotechnology in the context of crop and livestock production, silviculture, aquaculture, and perhaps apiculture and plant nurseries. Attention will be paid to both the potential benefits and the risks of biotechnology and to safeguards, as well as consideration of non-market impacts on society such as the quality of life. A final chapter will focus on choices that need to be made that will affect biotechnology application and results. A complete draft is expected by June 15; final publication is scheduled for February 1990.

- "Biotechnology and the Food Supply: Looking at the Tough Issues" was the title of a seminar held in Washington, D.C., March 22-23. The conference was sponsored by Public Voice and supported by industry, the Food and Drug Administration, and USDA. Over 100 people, including many citizens' groups, attended the meeting. USDA's David

Berkowitz and Ron Buckhalt chaired two of the sessions. The objectives of the conference were to promote understanding among consumers about biotechnology, to draw the consumer into the policymaking discussions, and to spark a dialogue between consumer leaders and decisionmakers in government and industry. All participants agreed more should be done to inform and educate the general public about biotechnology.

- USDA's Agricultural Biotechnology Research Advisory Committee (ABRAC) met March 22-23 in Washington, D.C., to discuss the draft copy of research guidelines and a proposal submitted by Auburn University to field test transgenic carp in outdoor contained ponds. The ABRAC clarified the meaning of certain words and phrases used in the guidelines and suggested other modifications to the document. OAB will assemble the ideas and integrate them into a revised draft.

Rex Dunham, principal investigator for the Auburn project, presented the university's proposal to the Committee. He highlighted the history of gene transfer experiments world-wide and said the major emphasis has been on the transfer of growth hormone genes. The carp received a growth hormone gene from rainbow trout. Auburn's proposal is to place six large transgenic carp in sex-segregated contained ponds. When sexually mature, the fish would return to the laboratory, spawn, and the fry moved to the contained ponds. The long-term goal for Auburn, said Dunham, is to be able to increase the growth rate of channel catfish, a food item important to the economic prosperity of several southern states.

In a 9 to 2 count, with two abstentions, the ABRAC voted to recommend acceptance of Auburn's proposed confinement procedures as adequate, with the understanding that the university would document the information it presented orally at the ABRAC meeting. The ABRAC has formed a sub-committee to review the documentation. The ABRAC recommendation will be forwarded to the Assistant Secretary for Science and Education for a final decision.

- About 350 representatives of the biotech industry, academia, and the business community attended the AgBiotech '89 conference and trade exposition March 28-30 in Crystal City, Va. USDA unveiled its new biotechnology exhibit along with one-page "fact" sheets that highlight the Department's various programs and activities. No other federal agency exhibited at the conference. The technical seminars focused on transgenic animals, plant molecular biology, business strategies, patents, and regulations.

NEW PUBLICATIONS

"The 1989-1990 Edition of Bioengineering News' Bio 1000 Directory." A directory of the world's leading 1000 biotechnology companies, including phone-telex-fax numbers, contact names, product information, investors. Call (206) 928-3176 for more information.

"Directory of Montgomery County High Technology Firms," is a new publication prepared by Montgomery County, Maryland's High Technology Council Inc. It costs \$30 for Council members and \$40 for non-members. Available on floppy disk. For more information, call (301) 762-6325.

UPCOMING MEETINGS

April 11-12: The 1989 Conference on Commercial Biotechnology. Cambridge, Mass. Sponsored by Business Communication Co. Inc. For details, call (203) 853-4266.

April 17-19: Alltech's Fifth Annual International Symposium on Biotechnology in the Feed Industry. Lexington, Ky. Call Pearse Lyons or Ginny Cooley at (606) 885-9613.

April 20: "Acquisitions and Mergers: What's Happening in the Marketplace". Another in a series of Biotechnology Network Breakfasts sponsored by the Montgomery County Maryland High Technology Council Inc. Meeting takes place at the National Institute of Standards and Technology, Gaithersburg, Md., at 8 a.m. For more details, call (301) 762-6325.

April 20-21: Conference on Commercialization of Biotechnology Innovations. Lansing, Mich. Sponsored by the Michigan Biotechnology Institute, the Michigan State University, and Fisher Scientific. For more information, call either Gretchen Smith or Michele Dunckel at (517) 337-3181.

April 27-28: The Impact of Newer Institutional Developments on Commercializing Biotechnology. The University of Texas at Austin. For more information, contact Tom Mabry at (512) 471-1900.

May 8-12: 11th Symposium on Biotechnology for Fuels and Chemicals. Colorado Springs, Colo. For details, write to Elias Greenbaum, 11th Symposium on Biotechnology, Oak Ridge National Lab., P.O. Box 2008, Oak Ridge, Tenn. 37831-6194.

May 8-12: Toxicity Assessment Using Microbial Systems. Las Vegas, Nev. Write to Toxicity Testing Symposia, P.O. Box 134, Burlington, Ontario L7R 3XR.

May 16-19: Biotechnology in the Pulp and Paper Industry: 4th Annual Symposium. Raleigh, N.C. Contact Jane Kohlman, USDA, Forest Service, Forest Products Lab., 1 Gifford Pinchot Dr., Madison, Wisc. 53705-2398.

May 16-19: Ecoinforma '89. The First International Congress and Exhibition on Environmental Information, Communication, and Technology Transfer. Bayreuth, West Germany. Sponsored, in part, by USDA's Office of Agricultural Biotechnology. For more information, write to Dr. H. Fiedler, Ecological Chemistry, University of Bayreuth, P.O. Box 10 12 51, D-8580 Bayreuth, Federal Republic of Germany, or FAX 49 (921) 54626.

May 19-23: China Agri '89. Beijing, China. China's Ministry of Agriculture's first ag technology exhibition. Call Asia Marketing Associates at (508) 655-4000.

May 22-24: "Biotechnology and Sustainable Agriculture: Policy Alternatives." Ames, Iowa. Sponsored by the National Agricultural Biotechnology Council, a consortium of institutions funded by the Joyce Foundation. For more information about the conference, either write to Walter Fehr, Biotechnology Coordinator, 1212 Agronomy Bldg., Iowa State University, Ames, Iowa 50011, or call (515) 294-6865.

May 22-25: 3rd Annual Seminar on Analytical Biotechnology. Baltimore, Md. Contact Janet Cunningham, Barr Enterprises, P.O. Box 279, Walkersville, Md. 21793, or call (301) 898-3772.

May 30-31: 7th Annual DECHEMA Meeting of Biotechnologists. Frankfurt am Main, West Germany. Write to DECHEMA, Abt. Tagungen, Postfach 97 01 46, D-6000 Frankfurt am Main 97, West Germany.

June 12-14: 4th European Conference on Industrial Biotechnology. Varese, Italy. Write to Dott. Sergio Merli, Farmitalia Carlo Erba, Via Dei Gracchi, 35, 20146, Milan, Italy. Call (02) 6995.4661, or FAX (02) 6995.4571.

Biotechnology Notes is written by Marti Asner, a public affairs specialist on assignment to OAB. Suggestions for items to include in future issues are always appreciated and may be sent to: USDA/OAB, 14th and Independence Ave., S.W., Room 321-A, Administration Bldg., Washington, D.C. 20250; or phone (202) 447-9165.

